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KWANGTUNG IRON AND STEEL MACHINERY PLANT NO 1  
SEEKS BETTER HIGH-SPEED CUTTING METHODS

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The Kwangtung Iron and Steel Machinery Plant No 1 has been seeking better high-speed cutting methods. In June 1951, this plant released a report on the subject of high-speed cutting method which was devoted primarily to: (1) the performance of high-speed cutting tools under actual conditions as exhibited in Peiping under the auspices of the Ministry of Heavy Industry, and (2) a report written by a Soviet specialist on the basic problems of high-speed cutting.

Following this [June 1951] report, the plant undertook to increase its productive capacity with available tools. A project was set up to convert the lathe into a high-speed cutter and also to familiarize the operators with the construction and capability of a lathe. One of the requirements in the conversion was to increase the spindle speed. Among the many machine tools available, the all-g geared lathe, being most suitable for the project, was selected to be inspected and overhauled for the conversion. During the major overhauling, which required 3 weeks, all parts were thoroughly analyzed.

After the successful conversion of this lathe into a high-speed cutter, tests of its cutting capability were made. The tests revealed that the workers of this plant did not have any experience in the use of cutting tools. At the same time, it was discovered that the grinding machines on hand were not adjusted to grind cutting tools to the appropriate angles. The workers were sent to the Kwangtung Machinery Plant to examine the machinery at that plant. As a result of their study, the workers were able to recondition two lathes and a milling machine at the Kwangtung Iron and Steel Machinery Plant No 1 so that high-speed cutting can be undertaken. In the major overhauling of the milling machine, attempt was made to increase its maximum spindle speed of 420 rpm, but with the available cutters, this was not deemed possible. In the reconditioning work an all-g geared lathe with a spindle speed of 720 rpm was also overhauled.

As a result of tests made in cutting iron, copper, and manganese steel castings, it was discovered that the lower the temperature of the materials being worked on at high speed, the better the result.

The factors which made it difficult for the Kwangtung Iron and Steel Machinery Plant No 1 to successfully complete its aims in this project were as follows:

1. Since the composition of the hard alloys available on the local market was unknown, the special characteristics of these metals could not be used to best advantage.
2. Cutters made by the welding process were not of the best quality.
3. Hard alloys and grinding wheels were difficult to purchase.
4. The production of numerous types of commodities by this plant made it impossible to take full advantage of the discoveries made in the use of hard-alloy metals in the mass production of any single commodity.
5. Since the composition of the cutting gears could not be determined, the spindle speed could not be increased to any great extent.

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